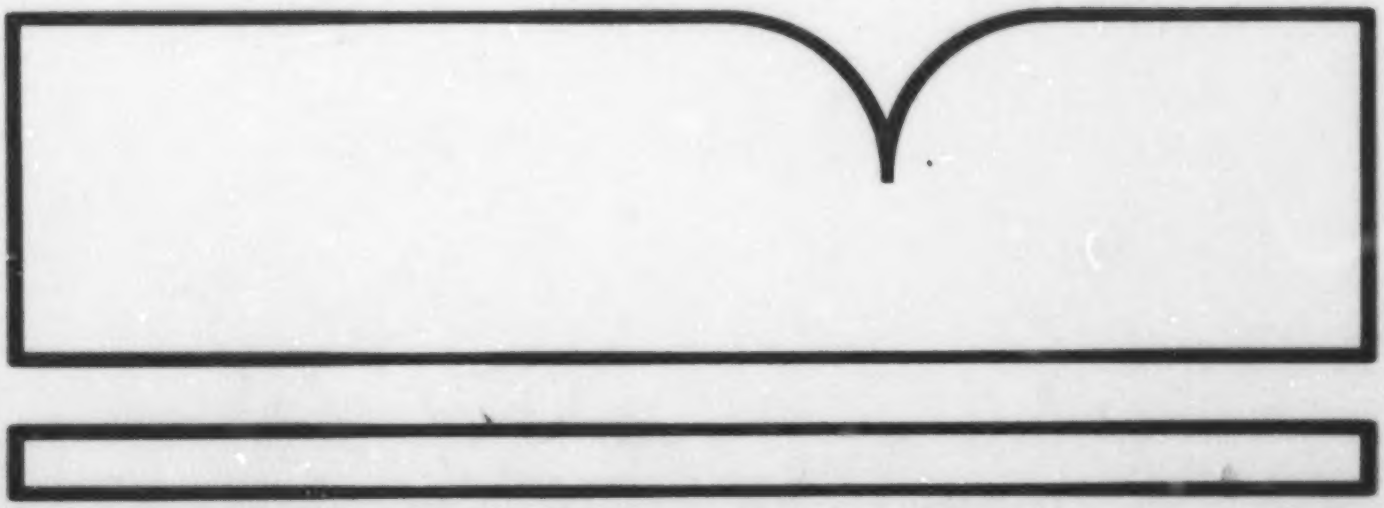
PB87-116505

# Pesticide Fact Sheet Number 96: Diazinon

(U.S.) Environmental Protection Agency
Washington, DC

Sep 86



U.S. Department of Commerce
National Technical Information Service
NTIS

50272-101

| REPORT DOCUMENTATION PAGE | 1. REPORT NO. | 2. | PB87-116505 |
|---|---|---|---|

**4. Title and Subtitle**
EPA Pesticide Fact Sheets - DIAZINON No. 96

**5. Report Date**
Issued 9/86

**6.**

**7. Author(s)**
EPA, Office of Pesticide Programs, Registration Division

**8. Performing Organization Rept. No.**
540/FS-87- 113

**9. Performing Organization Name and Address**
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Washington, D.C. 20460

**10. Project/Task/Work Unit No.**

**11. Contract(C) or Grant(G) No.**
(C)
(G)

**12. Sponsoring Organization Name and Address**
Same as #9

**13. Type of Report & Period Covered**

**14.**

**15. Supplementary Notes**

**16. Abstract (Limit: 200 words)**

This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the following actions has occurred.

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

**17. Document Analysis a. Descriptors**

Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, Science Findings

**b. Identifiers/Open-Ended Terms**

**c. COSATI Field/Group**

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA. 22161

| 18. Availability Statement: | 19. Security Class (This Report) | 21. No. of Pages |
|---|---|---|
| Publicly Available | Unclassified | 7 |
| | 20. Security Class (This Page) Unclassified | 22. Price |

United States
Environmental Protection
Agency

Office of Pesticides and Toxic Substances
Office of Pesticide Programs (TS-788C)
Washington, DC 20460

EPA

# Pesticide Fact Sheet

**Name of Chemical:** Diazinon
**Reason for Issuance:**
**Date Issued:** September, 1986
**Fact Sheet Number:** 96

1. Description of chemical

Chemical name: O,O-Diethyl O-(2-isopropyl-6-methyl-4-pyrimidinyl) phosphorothioate

Common name: Diazinon

Trade name: Spectracide, AG500, Alfa-tox, Sarolex, D-Z-N Diazinon 14G, Geigy Spectracide Lawn and Garden Insect Control, etc.

EPA Shaughnessy code: 057801

Chemical abstracts service (CAS) number: 333-41-5

Year of Initial Registration: 1952

Pesticide type: Insecticide

Chemical family: Organophosphate

2. Use patterns and formulations

Application sites: Field, fruit, nut, vegetable (including seed treatment) and nonfood crops (ornamentals and tobacco); forestry (including Christmas tree plantations); greenhouse food crops (vegetable bedding plants and ornamentals); livestock; range, pasture, and grassland; animal premises; lawns and turf; domestic outdoor and indoor (household); commercial indoor (including food handling establishments and processing plants); commercial and industrial outdoor sites.

Types of formulations: Wettable powder, wettable powder/dust, emulsifiable concentrate, dust, microencapsulate, soluble concentrate, granular, oil solution, aerosol spray, spray concentrate, impregnated materials, soluble concentrate, liquid ready-to-use, and pressurized liquid.

Types and methods of application: Ground, aerial, and those methods unique to the formulation, such as aerosols.

3. Science Findings

Physical and Chemical Characteristics-

Physical state: Liquid
Color: Colorless (Technical is amber to brown)
Odor: Typical of organophosphates
Boiling point: 83-84° C
Melting point: Not applicable
Flash point: 82° F for AG500
>105° F for 4E and 4S

Human Toxicology Characteristics-

Acute rat oral $LD_{50}$: 66-635 mg/kg for females and 96-967 mg/kg for males, Toxicity Category II
Acute rabbit Dermal $LD_{50}$: >2,000 mg/kg, Toxicity Category III
Acute rat inhalation $LD_{50}$: 3.5 mg/l, Toxicity Category III
Dermal rabbit irritation: Toxicity Category IV
Eye rabbit irritation: data gap

Ecological characteristics-

Hazards to aquatic invertebrates and wildlife:

Avian subacute dietary $LC_{50}$ (ppm)
191 for Mallard Ducks
245 for Bobwhite Quail

Avian acute oral $LD_{50}$ (mg/kg)
3.5 for Mallard Ducks
10 for Bobwhite Quail

These values characterize diazinon as very highly toxic to birds.

Aquatic invertebrate $LC_{50}$
0.079 ppm for bluegill sunfish
0.635 ppm for rainbow trout
0.522 ppb for *Daphnia sp.*

These values characterize diazinon as very highly toxic to fish and aquatic invertebrates.

4. Summary of regulatory position and rationale

On January 15, 1986, a FEDERAL REGISTER Notice was published concerning the Special Review of all pesticide products containing diazinon registered for use on golf courses and sod farms. The Special Review was based on the hazard to non-target birds from diazinon's use on these two sites. The Notice announced (1) the initiation of the Special Review on

these two sites, (2) the Preliminary Determination proposing to cancel registrations and deny applications for diazinon products used on these two sites, and (3) the availability of the Support Document. The Support Document contained a risk/benefit analysis, which was the basis for the Agency's action.

In evaluating the hazard to birds, the Agency considered (1) acute toxicity studies which indicated that diazinon is very highly toxic to birds, (2) residue level and dose estimates on grass and seed which indicated a potential hazard, and (3) bird kills reported to the Agency in which diazinon was either confirmed or implicated as the primary cause. These kills have involved 23 species of birds and occurred throughout the country and throughout the year.

The Agency's concern for the hazard to non-target birds included a concern for the impact on populations of species at risk. The Agency reviewed information which indicated that diazinon caused a reduction of a local population of Atlantic Brant Geese when applied according to label directions to a golf course in New York.

The Agency also reviewed information concerning the avian and human hazards of the five major alternatives. Based on a comparative avian hazard assessment, the Agency determined that the major alternatives are not likely to be of greater hazard to birds than diazinon. Based on the available data concerning the hazard to humans, the Agency determined that the alternatives do not appear to pose a greater human health hazard than diazinon.

In the Support Document the Agency also reviewed the benefits of diazinon on golf courses and sod farms. Estimates indicate that at least 512,000 pounds are used per year on golf courses and 60,000 pounds on sod farms. The impact of cancellation that results would be a cost increase of $937,200 for golf courses and $300,000 for sod farms. The Agency anticipates that these impacts would be minor when compared to the maintenance cost of $1,900,000,000 for golf courses and the gross revenue of $210,000,000 on sod farms.

In weighing risks and benefits, the Agency reviewed a number of options to reduce the risk to birds. However, the Agency determined that cancellation was the only option that would reduce the hazard to birds adequately. The Agency concluded that the risks outweigh the benefits and proposed cancellation of all products registered for use on sod farms and golf courses.

During the comment period that followed publication of the FEDERAL REGISTER Notice, the Agency received additional information on the hazard to birds, which included reports of 26 additional bird kills. These kills once again confirm that the hazard from diazinon is widespread throughout the country and throughout the year. In addition the Office of Endangered Species, U.S. Department of the Interior, commented that certain endangered species could be seriously affected by the use of diazinon on golf courses and sod farms.

The Agency also received data concerning diazinon residues on grass and effects on Canada Geese penned on turf. The data demonstrated that birds foraging on treated turf would be exposed to lethal diazinon residues within a very short period of time and that these residues would be high enough to cause death to foraging waterfowl.

During the comment period the Agency also received information regarding the benefits of diazinon use, which included efficacy data on diazinon and its alternatives. The results indicated that the efficacy of the major alternatives is about the same as diazinon.

The Office of Pesticide Programs (OPP) transmitted the Support Document to the Scientific Advisory Panel (SAP) and the U.S. Department of Agriculture (USDA). The SAP's comments supported the Agency's conclusions concerning the avian hazard from diazinon application to golf courses and sod farms. The USDA commented that the proposed cancellation action was premature and could be inappropriate. The FEDERAL REGISTER Notice responds point-by-point to each of their comments.

The Agency also received 96 comments during the public comment period, most of which supported the proposed action.

The Agency carefully reviewed all of the new information and all of the comments that were submitted. The Agency still concludes that the hazard to birds from diazinon use on golf courses and sod farms outweighs the minor benefits and that cancellation is the only appropriate action.

5. Summary of major data gaps

The Agency is concerned about the hazard to birds from diazinon use on other sites. The data base is inadequate to evaluate the hazard on all of the remaining sites at this time. Consequently, the Agency is requiring the data necessary to fully evaluate this problem through the reregistration process. A Registration Standard is scheduled to be completed by the end of this year.

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